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# NOTES AND COMMENT

## A REACTION TO A VARIATION IN LIGHT INTENSITY BY THE COFFEE LEAF-MINER

While passing through a coffee grove near Lares, Porto Rico, on April 19, 1921, several small silver-white moths of the coffee leaf-miner, *Leucoptera coffeella* Stain. (Lepidoptera, Family Lyonetidae), were noted on the upper sides of the leaves. Cook & Horn, who had studied this insect in Cuba, state (p. 5, Bulletin No. 3, Estación Central Agronómica de Cuba): ". . . we have never seen an adult insect in the field, but have raised them in great abundance in our laboratory." On June 14, when passing through the same grove, not a moth was noted during a careful search, but looking beneath the leaves, several were soon found. The sun was shining brightly at the time; the April observations were made when the sky was overcast with clouds. Before departure from the grove the sun went under a cloud and a couple of moths were seen on the upper surface of the leaves. These observations on the reaction of the moth to sunlight and to clouds obscuring the sun have since been confirmed at several other widely separated localities. This is not a reaction to sunlight and shade, as coffee is practically always grown under the comparatively dense shade of other trees, but a reaction to the much reduced leaf-filtered sunlight and cloudiness.

The leaf-miner caterpillars, when fully grown, emerge from their mines and spin a cocoon on the underside of coffee leaves, or of the large leaves of other plants occurring in coffee groves. Under normal conditions, even in the most densely shaded groves, the cocoons *never* occur on the upper surface. A small coffee tree, the leaves of which happened to be infested with miners, was potted and placed in a corner on the covered gallery or porch of the Entomological Laboratory of the Experiment Station at Rio Piedras, P. R., where there was light, but never direct sunshine. A few days later eight cocoons of the leaf-miner were found on the upper surface of the leaves and none on the under surface. Other small coffee trees, transplanted at the same time to the yard of the laboratory where they were in the partial shade of some guava bushes, also had numerous freshly formed cocoons of *Leucoptera* on their leaves, but all on the underside. This shows that both the caterpillar and the moth of *Leucoptera coffeella* are remarkably sensitive to a variation in subdued light intensities.

GEORGE W. WOLCOTT

SAN JUAN,
PORTO RICO

## NOTES ON THE ANIMAL HABITATS AT MISSOULA, MONTANA

Missoula has an elevation of 3,223 feet, and is located in the broad valley at the junction of the Bitterroot River with the Clark Fork of the Columbia. On every side mountains rise several thousand feet above the valley. The summers and autumns are mild and pleasant; but the winters are severe, with many storms; and the springs are uncertain and backward.

Bunchgrass, which originally covered most of the floor of Bitterroot Valley, extends over the lower exposed slopes of the mountains. Along the streams is a fringe of deciduous trees and shrubs dominated by cottonwoods, but commonly containing such forms as western birch, alder, willows, yellow pine, dogwood, thorn, clematis, Symphoricarpos, elderberry, mountain maple, cherry, mountain ash, rose, and syringa. Some of these shrubs form thickets along the small streams in the mountain canyons. A few small meadows occur along the larger streams. Small areas on the exposed lower slopes of the mountains are covered by a scrubby growth, somewhat resembling chaparral, in which ninebark and service-berry are conspicuous species. In Lo-lo Canyon small patches of sagebrush were noted on the side exposed to the sun.

Yellow pine is the characteristic tree of the drier exposed mountain slopes which are not occupied by bunchgrass, the pine apparently not being able to withstand quite as much exposure to wind and sun as the grass. The slopes on which this tree is found are frequently very rocky. Yellow pine is found also in some of the drier places in the valley bottoms, and it seems frequently to succeed the cottonwoods in those parts of the valleys where the downcutting of the stream has lowered the water-level below the reach of the deciduous trees.

The moister, protected lower slopes of the mountains, and most of the higher slopes, are covered by a coniferous forest in which Douglas fir is the most characteristic tree, but which includes in places a goodly number of western larches. In some of the higher canyons lodgepole pine, Engelmann spruce, and grand fir were noted, but no trips to the higher parts of the mountains were made in this region, and no description can be given of the habitats of the higher altitudes.

The natural animal habitats of the region about Missoula may be tentatively listed as follows:

Aquatic
Shore
Meadow
Cottonwood
Canyon-thicket
Douglas fir—larch
Yellow-pine
Scrub
Sagebrush
Bunchgrass
Rocky-slope
Aerial

Of modified habitats the Cultivated-field, Orchard, Burned-forest, and Edificarian are represented.

Lee R. Dice

## Conservation Week in New York

The first week in April is to be devoted by the New York City and State Federation of Womens' Clubs to arousing public interest in conservation. In addition to a pageant, one day is to be given to wild life, one to parks, and one day to forestry.

## Society Affairs: The Voluntary Contributions.

Each member of the Society received, with the announcement of the Toronto Meeting, a request for a voluntary contribution to be applied toward the removal of the deficit incurred in the publication of the first two volumes of Ecology. The deficit at the end of the second volume is substantially less than at the end of the first, but ought, if possible, to be removed, preferably without raising the dues or drawing further on funds available for the other activities of the Society. It appeared at the time the request was sent that this deficit would be in the neighborhood of $500, toward which $200 was pledged by a person who prefers to remain unknown, on condition that the Society contribute an equal amount in addition to its regular dues. After the circulars had been mailed it was learned that the Brooklyn Botanic Garden is prepared to contribute for 1921, up to $300 as it had in 1920, thus reducing the needed sum to $200. At the Toronto meeting it was decided not to send out a supplementary circular. The conditional gift of $200 has been modified so that it will not be lost if the Society does not raise the full $200. Whatever the Society contributes up to this sum will be duplicated. Any amount received over and above the actual deficit will go towards an increase in the number of pages which is urgently needed to take care of the heavy demand for space.